

WATER CONSERVATION NEWS

"Building sustainability, reliability, and accountability through efficient water use"

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Office of Water Use Efficiency: The Services We Offer

By Manucher Alemi, Supervising Land and Water Use Analyst

The Office of Water Use Efficiency, a division of California Department of Water Resources, was established as its own office in 2001 as an expansion and reorganization of DWR's water conservation program that has been in place for over two decades. The expansion was necessary to respond to CALFED water use efficiency program implementation needs as well as the greater need for water conservation statewide. The expanded mission includes not only saving water, but also improving water quality, recycling and desalination.

Based on the concept of serving the needs of water users including the local water agencies and the public, OWUE's mission is to promote water conservation through technical and financial assistance in cooperation with local entities and other agencies. Our basic services to local agencies include:

- assisting agricultural water supplier agencies to prepare agricultural water management plans;
- reviewing and evaluating the plans, and helping implement efficient water management practices and drainage management measures;
- assisting urban water agencies prepare urban water management plans;
- reviewing and evaluating urban water management plans; and
- serving the public's water use and water conservation information needs.

Senate Bill 610 amended the Urban Water Management Planning Act and Senate Bill 221 makes a reference to UWMPs with regard to urban water shortage contingency analysis. OWUE has developed a draft guidebook to assist water suppliers to prepare assessments and provide information on using the UWMP to help prepare the verification of water supply availability required by SB 610 and 221, respectively.

Staff also works closely with CALFED Water Use Efficiency Program and helps CALFED achieve its water use efficiency goals. The OWUE agricultural and urban grants to support water conservation projects in 2001 and 2002 were \$12.9 million and \$9.8 million, respectively. The Proposition 50, passed by California voters, provide \$120 million additional funding over the next three years for water use efficiency projects.

The Water Recycling and Desalination Program goal is to protect the environment, increase local water supply and reliability, and improve water and energy efficiency by the use of recycled and desalinated water through statewide coordination, partnerships, regional studies, and data collection and analyses. The Recycling Program staff is

Continued on page 2. See "OWUE: Services."

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OWUE: Services

(continued from Page 1)

involved in an interagency coordinated effort to carry out the Recycled Water Task Force. The Task Force is identifying constraints and opportunities for water recycling in the state. The Task Force will make its recommendations to the Legislature by July 2003. OWUE will be involved in forming a newly authorized Desalination Task Force to make recommendations related to potential opportunities for the use of seawater and brackish water desalination. This authorization requires DWR to report to the Legislature by July 2004 on potential opportunities and impediments for desalination and to examine what role, if any, the State should play in furthering the use of desalination technology.

The OWUE California Irrigation Management Information System (CIMIS) provides, near real-time weather and evapotranspiration data via Internet to the public. OWUE is involved in other ways to promote water conservation by publishing water conservation technical assistance information, disseminating data, developing new technologies, holding educational workshops, assisting with landscape water conservation, and mobile labs for irrigation evaluation.

The Central Valley Regional Water Quality Control Board has recently embarked on a watershed approach to reducing contaminants from agricultural runoff. Office of Water Use Efficiency staff can help reduce the volume of runoff by identifying site and problem-specific water management practices.

OWUE's challenge, and our staff's commitment, is to work with agencies and individuals throughout the state to remove the barriers to water use efficiency, provide financial assistance to support projects that save water, help develop new methods and strategies, and address emerging issues such as runoff control. The objective is to save water for California's future. To learn more about us or inquire any information, visit our new Web site at www.owue.water.ca.gov.

CALFED is a cooperative effort of more than 20 state and federal agencies working with local communities to improve the quality and reliability of California's water supplies and revive the San Francisco Bay-Delta ecosystem. Its mission is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System. For more information visit <http://calfed.water.ca.gov>.

Mission Statement of the Office of Water Use Efficiency

"To advance the efficient management and use of California's water resources in cooperation with other government agencies and the private sector through technical and financial assistance."



Resolutions for a New Year of Gardening

By Julie Saare-Edmonds



"This year will be different," we say that to ourselves every December and January when we make our New Year's Resolutions. Unfortunately, some of us fail to keep those resolutions, not because we did not try, but because we set unreasonable goals. There are, however, reasonable goals we can set for ourselves and achieve with a little planning. One aspect most of us can improve is the care and maintenance of our gardens. Landscapes serve important functions in our lives, they provide a place for children to play or a spot for a peaceful respite, a place to entertain friends and trees to shade the house. Some of the best landscapes also provide flowers, fruits and vegetables for the gardener. Consequently, we spend a lot of time, energy and resources maintaining our landscapes so their care merits a New Year's Resolution or two. Here are a few "New-Year's resolutions," for improving your landscapes and making your irrigation system more efficient:

- Turn off your sprinkler timer for the rest of winter, if you haven't done so already. In most areas of the state rainfall provides enough water through the winter. But if you live in an area where rain just isn't adequate, water manually when needed or turn the controller down to a fraction of the summer peak setting. This is easily done by using the percent water budget button found on most controllers.
- Aerate your lawn next spring. This will allow better infiltration of water and better air circulation to the grass roots.
- Schedule time on a calendar to test and maintain the sprinkler system through the whole year.
- Begin planning any large changes to your landscape now. Give yourself time to select low water using plants and decide what the right irrigation system would be for the new landscaped area.
- Find out what your lawn and garden really need in terms of water requirements. You can find this out by looking at "A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California" online at www.owue.water.ca.gov/docs/wucols00.pdf. Begin on page 62 of the guide to find your climate region and the water category symbols. Page 63 is the beginning of the plant list. This list can help you determine what water requirements your plants have. If you're not sure of the botanical names used starting on page 63, a common name cross-index begins on page 101. *Sunset Western Garden Book* is another source of information about watering requirements.
- Start grasscycling using compost and mulch. Mow frequently at a high setting and leave the clippings

on the lawn. If the clippings are too long to leave, gather them up and start a compost pile. For advice on composting, mulch and grasscycling see the California Integrated Waste Management Board Web site: www.ciwmb.ca.gov/Organics

- Eliminate runoff from your landscape next year. Runoff is a major source of water pollution because pesticides, fertilizers, pet waste and oil are carried in irrigation runoff and rain from yards and driveways into gutters, storm drains and in most cases, directly to creeks. Stormwater is rarely treated before it gets to a body of water. Prevent runoff by adjusting the sprinklers to spray correctly, and/or adjusting the controller (sprinkler timer) to run several short intervals so that the water can soak in. Do not overuse pesticides and fertilizers.

Some of these suggestions are straightforward; however, we sometimes need reminders. That is where water agencies come in; they can include these suggestions in water bills for a wider distribution.

Free Irrigation System Evaluation



The Department of Water Resources has contracted with Pond Shafter Wasco Resource Conservation District to offer a limited number of free mobile laboratory irrigation system evaluations. The intent of the contract is to demonstrate the information and services that mobile labs can offer and to show the advantages of improving an irrigation system's uniformity.

If you are interested in a mobile lab demonstration please contact John Wynn at (916) 651-7035. Only a limited number of demonstrations are available.

Are Graywater and Recycled Water the Same?

By Fetbi BenJemaa, Fawzi Karajeh and Julie Saare-Edmonds

Recycled water and graywater are very different types of water. Using the two expressions interchangeably is a common mistake that stems from the lack of understanding of these terms. Recycled water is wastewater that has been subjected to treatment and purification making it suitable for a multitude of beneficial uses ranging from crop irrigation to replenishing potable water sources (e.g., groundwater recharge and surface water augmentation). It is the level of treatment and purification that dictates the permissible types of uses of recycled water. At low levels of treatments, namely primary treatment, few uses are allowed such as irrigation of non-edible crops. At higher treatment levels, recycled water becomes suitable for a wider range of beneficial uses with fewer restrictions. Recent advances in water treatment technologies such as micro-filtration, nano-filtration and Reverse Osmosis can produce high quality recycled water.

Graywater is basically wastewater originating from showers, bathtubs, clothes washing machines, hand washing lavatories and sinks that are not used for disposal of chemicals or chemical-biological ingredients. Graywater excludes toilet wastes, known as 'Blackwater,' and is free of high concentrations of organic wastes such as those derived from garbage disposals and dishwashers. Graywater is generally subject to very little treatment or no treatment at all. However, some sophisticated graywater systems that are commercially available include sand filters and settling tanks. Such systems can be expensive and difficult to operate and maintain. Graywater is intended for use on-site within the building or structure that discharges it. In response to health

and environmental concerns over the use of graywater, a number of restrictions and precautions are highlighted in the laws and standards governing the design and use of graywater systems. Graywater use is limited to subsurface application through drip and mini-leachfield irrigation systems. Appendix G (Graywater Systems) of the Building Standards Commission sets the graywater standards.

Unlike graywater, which is produced and used on-site in a decentralized fashion, recycled water is distributed from the wastewater treatment plant. In terms of quality, recycled water can be very high depending on the treatment processes used. As a result, treated wastewater effluents discharged by wastewater treatment plants are generally of better quality than graywater, especially beyond the secondary treatment level. Recycled water is a product of a treatment process which typically involves the following stages:

1. the Primary Wastewater Treatment process, which incorporates physical aspects, untreated water is passed through a series of screens to remove solid wastes;
2. the Secondary Wastewater Treatment process, typically involving biological and chemical processes, screened wastewater is then passed a series of holding and aeration tanks and ponds; and
3. the Tertiary Wastewater Treatment process consisting of flocculation basins, clarifiers, filters, and chlorine basins or ozone or ultraviolet radiation processes.

For specific requirements and uses, additional treatment may be carried out such as reverse osmosis. Tertiary disin-



fected recycled water can be used for many beneficial uses including irrigation of edible crops and recreation where full body contact with water may occur. In contrast, graywater shall not be contacted by humans nor shall it be used for vegetable gardening.

The cost of treatment and distribution of recycled water can be significant. However, wastewater treatment plants are required by law to treat their effluents to meet discharge requirements whether or not effluents are used as recycled water. Similarly, graywater systems can also be expensive. Though they have the same end objective of saving valuable water resources through reuse, graywater and recycled water systems seem to be in conflict. Domestic graywater reuse diminishes sewer flow, thus less influent will be available for the treatment plants resulting in less recycled water. For a given community, to promote one option or the other, a thorough investigation should be conducted taking into account all the aspects and pros and cons of each option. Such investigation would include among other aspects: economic factors, health and environmental factors, and public acceptance. For communities where a water recycling distribution network is already in place, the use of recycled water becomes more advantageous in terms of public health safety and ease of use.

For information regarding recycled water or graywater, please visit our home page at www.owue.water.ca.gov



Definitions

Graywater

Graywater is untreated wastewater which has not come into contact with toilet waste. It includes water from clothes washing machines, showers, bathtubs, hand washing, lavatories and sinks that are not used for disposal of chemicals or chemical-biological ingredients. Also spelled as Gray Water or Greywater.

Recycled Water

Recycled Water or "Reclaimed water" (as it used to be called) is wastewater that becomes suitable for a specific beneficial use as a result of treatment and purification. General types of treated wastewater include

- *Primary Effluent* recycled wastewater that only has had sewage solids removed and is typically used for surface irrigation of trees, fodder and fiber crops;
- *Secondary Effluent* recycled water that has had sewage solids removed and has been oxidized and disinfected and is used to irrigate golf courses and cemeteries and provide water for pasture and food crops;
- *Tertiary Recycled Water* water produced by conventional sewage treatment followed by more advanced procedures including filtration and disinfection, providing it with the broadest range of uses.

2002 Recycled Water Task Force: Progress and Milestones

By Water Recycling and Desalination Staff

The 2002 Recycled Water Task Force, convened by the Department of Water Resources as mandated by Assembly Bill 331, has steadily progressed since its inception on April 3, 2002 toward fulfilling its mission. The Task Force is a cooperative effort of the California Department of Water Resources, the State Water Resources Control Board, and the Department of Health Services. Its goal consists of identifying opportunities for the beneficial use of recycled water and proposing recommendations for removing impediments and constraints to increasing the safe use of recycled water on a wider scale. The Task Force undertaking is of paramount importance and fits categorically in the statewide efforts toward a more comprehensive and sustainable water resources management strategy. Recycled water is considered as a new water source that supplements the state water budget. This new water has the special drought proof characteristic, making it a reliable source of water.

On September 12 the Task Force conducted its fourth meeting in the CAL/EPA Building in Sacramento to learn about progress made by the Task Force's six Workgroups:

1. The Science and Health/Indirect Potable Reuse
2. The Public Information, Education and Outreach
3. The Plumbing Code/Cross-connection Control
4. The Funding/CALFED Coordination
5. The Regulations and Permitting
6. The Economics



Left to right: Herman Collins, Jonas Minton, and Richard Katz.



The October 10 Public Discussion Session and the POWER Conference.

In addition to the different workgroup meetings, the Task Force, in conjunction with the California Water Policy Conference (also known as the POWER Conference), conducted the second Public Discussion Session in Los Angeles on October 10. Chairman Richard Katz, Co-Chairman Jonas Minton, Public Information, Education and Outreach Co-Chairman Herman Collins, as well as the Task Force lead staff, Fawzi Karajeh made brief presentations to the audience. The audience members were also given the opportunity to ask questions and make comments. In addition to other Task Force members, about 35 people attended the session. Participants had the opportunity to learn about the Task Force scope and progress, and communicate their comments concerning water recycling impediments in California and ways to advance the safe use of recycled water.

More information about the 2002 Recycled Water Task Force its different workgroups business can be found by visiting www.owue.water.ca.gov/recycle or contacting one of the following staff members:

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The Next Potential Water Supply Source to Southern California

By West Basin Municipal Water District staff

In California the future water supply picture is on thin ice. By 2015, Metropolitan Water District of Southern California (MWD) must reduce its use of Colorado River water by about 50 percent, because it is currently using more than its allocated share of water and the specter of drought always looms on the water horizon. As a result, MWD, West Basin Municipal Water District and its partners constantly must seek dependable sources of water for the Southern California region.

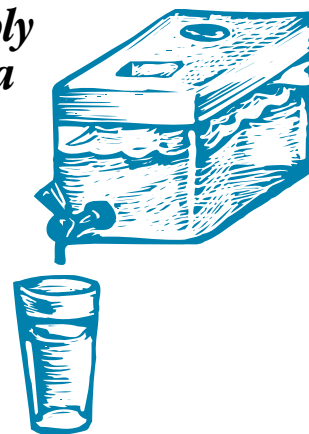
Most people in the industry and much of the public are aware of such solutions as conservation, various forms of storage and water recycling, but a “new” source has emerged — a source you know as the Pacific Ocean—that is now being called by some the “Pacific Aqueduct.” The West Basin Municipal Water District has recently taken steps to investigate whether desalinating ocean water from the Pacific would be considered a viable source for supplementing its water supplies. Ocean-water desalination is the removal of salt from ocean water, the source of which in Southern California is the Pacific Ocean, using various treatment processes. Ocean-water desalination is already in use around the world by countries that do not have a sufficient supply of water and also by military and cruise ships.



The Desalination Demonstration Project at Work.

With long-range planning for new water sources now the goal of agencies throughout the state and drought now being seen as an eventuality that is to be planned for before it occurs, desalination has become a permanent topic in the California water discussion. The question that is asked quite frequently is: Why pursue ocean-water desalination now? R. Keith McDonald, President of the West Basin MWD Board of Directors, has the answer, “Recent improvements in technology have made the cost of ocean-water desalination competitive with other sources,” he said. “It’s not a matter of *if*, but *when*, we will need to develop new sources of water in California . . . And our dream of having an abundant freshwater supply for Southern California can be a step closer to reality.”

Public awareness and acceptance of desalination as a viable water resource option also is growing. A recent statewide survey showed that 70 percent of the people favored pursuing ocean-water desalination and possibly making it part of the water resource picture. The public’s newfound knowledge has buoyed the spirits of industry officials involved in the desalination effort. The Sacramento Bee recently quoted Paul Shoenberger, Chief Engineer of the West Basin MWD, as saying “There is no new imported water coming into California. With the growth we are seeing, our only options are conservation, recycling used water and desalination.” This gives Shoenberger and his colleagues a clearer understanding of water supplies at the West Basin MWD, which has a strong track record of increasing water supplies for its surrounding communities through conservation and water recycling.



Benefits associated with ocean-water desalination are numerous. It is a new, virtually limitless supply of water that is:

- drought proof
- independent of water rights
- a source of high quality water.

The first step for West Basin and its desalination coalition partners towards adding desalinated ocean-water to the water supply portfolio is implementation of a demonstration project that will provide information used to assist in the final construction and operation of a 20 million gallons per day ocean-water desalination plant. The demonstration project uses state-of-the-art technology and is a collaborative effort that will benefit the entire water industry. “Our goal is that this project will become a regional and national asset for communicating best practices, educating the public and advancing the use of ocean-water desalination,” said Shoenberger.

With the assistance of its broad-based coalition partners, the West Basin MWD completed construction of the Ocean Water Desalination Demonstration Project, which is located in El Segundo and became operational in May 2002. The demonstration project consists of a 30,000 gallon per day treatment system comprised of microfiltration and reverse

osmosis units. This treatment system has a proven track record of use at West Basin's renowned water recycling treatment plant that produces high quality water used in the seawater intrusion prevention program. The goals of the ocean-water desalination demonstration project are to investigate several operational concerns that would assist designers in building the 20 million gallon per day ocean-water desalination treatment plant and to understand the water quality implications related to treatment, brine disposal, and distribution integration.

The \$1.2 million demonstration project is possible because of a broad coalition of support from the Association of California Water Agencies, American Water Works Association Research Foundation, California Department of Water Resources, Calleguas Municipal Water District, East Bay Municipal Water District, Long Beach Water Department, Los Angeles Department of Water and Power, Metropolitan Water District of Southern California, Municipal Water District of Orange County, National Water Research Institute, Poseidon Resources, Inc., San Diego County Water Authority, Tampa Bay Water, United States Bureau of Reclamation and West Basin Municipal Water District.

The water quality research related activities to be looked into include:

- investigating water quality challenges for desalination applications for potable water by conducting a literature review of past industry experiences, and case study evaluations of locations where desalination has been used as drinking water treatment technology;
- conducting a source water quality assessment that would assist in

understanding the potential changes due to climate, ocean-water environmental conditions, location of sources to the treatment system; etc.

- evaluating water quality information taken from the demonstration project in order to assist in the operations of the treatment system. This evaluation process would review;
- potential water quality implications during the integration process with other sources;
- potential for disinfection-by-product formation;
- brine disposal implications;
- corrosion control;
- biological stability;
- taste and odor issues; and
- other water quality implications.
- conducting a pathogen challenge test that would verify the virus/pathogen removal capabilities of the treatment system and validate disinfection credits for reverse osmosis systems;
- simulation testing of distribution system performance and disinfection by-product testing;
- conducting specialty water quality analysis including N-nitrosodimethylamine (NDMA), chromium IV, algae, algal toxins, etc.; and
- evaluating the potential and rate of biological re-growth in the distribution system

The results of this demonstration project research will enable West Basin Municipal Water District to understand the overall treatment scenario and to estimate capital and operational costs related to micro-



Overhead view of the Desalination Demonstration Project.

filtration and reverse osmosis treatment systems ranging in size between 10 and 40 million gallons per day.

West Basin Municipal Water District was created by a vote of the people in 1947, with a mission to provide a safe and adequate supply of water to communities, businesses and residents living in its service area. The West Basin Municipal Water District serves a population of about 851,000 people living in a 17-city area which covers about 185 square miles within the South Bay portion of Los Angeles County. In the early 1990s, the West Basin Municipal Water District made a decision to drought-proof its water supply as much as possible by implementing water conservation programs and building new facilities for water recycling. The water recycling facilities began operating in mid-1995 and now produce over 43 million gallons per day. The heart of the water recycling program is the West Basin Water Recycling Plant located in the City of El Segundo. The West Basin Water Recycling Plant produces five different qualities of recycled water used for: irrigation, industrial cooling, boilerfeed, seawater intrusion prevention, and other uses.



The Versatility of Watering Index

By John Wynn

Watering index is a concept where the current ET is divided by the peak summertime ET. Knowing the watering index allows one to adjust watering to the current climate conditions. The adjustment can be done daily or weekly—in this article, all references to the index will be assumed to be weekly, so ET values will be in inches per week. The watering index can be applied to controllers that do not have a water budget feature, sprinklers at the end of a hose, watering pastures on small ranchettes, and can be used by virtually anyone.

Watering index is a measure of the current ET in relation to peak ET. Therefore, by selecting a summer value as the peak ET

and using the current ET a local “index” is created. For example, if peak ET is 1.25 inches per week and current ET is 1.00 inch per week, the ratio or index is 0.8 or 80 percent. The key to the program is developing a watering schedule for the selected peak weekly ET. A typical weekly ET during the months of July and August is normally selected. Once a weekly schedule is determined, adjusting the schedule to current weekly ET can be done simply by using the weekly percent “index”. This can be done by either modifying the run time per application or the number of run times per week. The net effect is that water applications will closely match current ET requirements.

The index, then, will dictate how much to adjust the schedule from one based on peak weekly ET (program schedule) to a current schedule. This prevents the redundancy of creating a new schedule every time the ET changes—if the program schedule is 30 minutes of run

time per day and this equals 1.25 inches of weekly ET, 1.0 inch per week equals 24 minutes per day—that is, 1.25 multiplied by 0.8 equals 24. The method of creating a new schedule for any other week is similar, the ratio or percent of current ET is multiplied by 30 minutes program run time.

Another type of use is in controllers without a water budget feature. There are two ways a schedule can be modified according to the current watering index. The program run time can be modified to current ET or the number of start times can be altered. To schedule a controller that is programmed to run each day of the week, start by dividing 100 by the total number of starts per week, 7 for the daily starts. We get 14.3 or roughly 15 percent, so each day of the week represents about 15 percent of the weekly application. Therefore, for an index of 90 percent to

Continued.

See “Watering Index” on page 12.



Santa Clara Valley Water District Receives ACWA Award

One of the Santa Clara Valley Water District’s most successful water conservation programs received its first honor after helping save more than 70 million gallons of water since its inception four years ago. The Association of California Water Agencies recognized the Water-Wise House Calls program on November 21, 2002, with the Theodore Roosevelt Environmental Award for Excellence in Natural Resources Management.

Presented during ACWA’s annual conference in Anaheim, California, the award honors agency commitment to wise use of natural resources in a manner consistent

with the long-term goals of water management. “We’re pleased to be bringing this recognition of a water conservation program to the district,” said Hossein Ashktorab, manager of the district’s Water Use Efficiency Unit.

The program, one of the most comprehensive in the state, offers residents many opportunities to conserve water inside and outside the home as surveyors provide one-on-one consultations while auditing meter readings, checking toilets and faucets for leaks and replacing showerheads when needed. It is also an effective marketing and education tool for



During a Water-Wise House Call, a Santa Clara Water District staff member shows a customer how to decrease her sprinkler system’s water use.

other water efficiency programs offered by the district, such as the Ultra-Low Flush Toilet Retrofit Program and the High-Efficiency Clothes Washer Rebate Program.

California Water Awareness Campaign: Water Conservation Hits Home with “Right at Home” Campaign

By Debra Gonzalez

Billboard images border our highways and freeways luring you to think about such things as food, milk, cigarettes, alcohol, radio stations, banking and health insurance. They catch your eye as you gaze up while idling in traffic or while on vacation on a long stretch of open highway guiding you into new towns. In the summer of 2002, the images on billboards in Northern California were different. Billboards about water conservation sprang up asking you to save water, use a shutoff nozzle on your garden hose, set sprinkler timers and sweep rather than hose driveways. The billboards were part of a series of signage artwork distributed by the California Water Awareness Campaign's public information campaign.

The California Water Awareness Campaign (CWAC) was awarded a \$250,000 CALFED Water Use Efficiency grant in September 2001 to develop and implement a water awareness public information and education campaign in California. The CWAC developed a plan that included the development, implementation and assessment of the public information campaign efforts. A statewide public opinion survey, focused stakeholder interviews as well as focus groups were used to assess the level of understanding of how Californians related to important water issues. The assessment was used as a foundation to develop the media campaign. The theme developed was “Right at Home” and all the communications tools delivered the underlying message of water conservation and water quality with the line: “Use Water Wisely and Keep it Clean – It's a Way of Life.”

The five targeted geographic areas in California were Fresno, San Francisco Bay Area, Sacramento, San Diego and Los Angeles. The marketing tools developed for these regions consisted of television public service announcements, radio public service announcements, outdoor advertising including billboards, bus signs and bus kiosk signs, movie theatre advertising, print advertisements, utility bill inserts (to be used by local water agencies) and an information booklet.

Central Coast, KEUT, Santa Barbara, Fox Channel 6, San Diego and one Southern California station aired the public information announcements for approximately three months beginning in May. In the Central Valley the public information spots were aired on cable channels: Discovery, CNN, Animal Planet, ESPN, TBS, HGTV, Fox Family and BET. East Bay MUD ran theater ads and billboards. Orchard Dale Water District ran newspaper ads in the *Whittier Daily News* for over one month. Bear Valley Community Services District used a utility bill insert in August. Water Resources Association of San Benito County ran newspaper ads in *The Freelance* and *The Pinnacle*. Eastern Municipal Water District ran ads in the *Press-Enterprise* from late June through August, full-color pages in two local shopping guide magazines as well as movie theater ads on 36 screens in five cities. Fresno ran movie



Two of the billboards used in the water awareness campaign.



theater ads, bus signs and billboards. Sacramento ran four movie theater ads, bus signs and 15 billboards throughout the greater Sacramento and vicinity.

The “Right at Home” billboards and other art signage created a new awareness and direction for public communication and advertising right near our homes. The California Water Awareness Campaign has successfully completed its first year activities and the grant funded portion of their project. For more information call (916) 325-2596.

Legislation

As of the Water Conservation News January 2003 issue copy deadline, the California Legislature was on recess. Information on the latest legislation will appear in the April 2003 issue.

Irvine Ranch Water District's X-Ray Processor Retrofit Recirculates Water and Returns Savings

By Debra Gonzalez

Irvine Ranch Water District, located in Orange County, was awarded a \$13,698 Water Use Efficiency grant in September 2001 to install Water Saver/Plus recycling water devices on seven hospitals' x-ray film processors. The project was joined by East Bay Municipal Utility District and Upper San Gabriel Valley Municipal Water District. These x-ray film processors operate 24 hours per day all year. Published flow rates for x-ray film processors range from .2 to 2.5 gallons per minute (gpm) or 105,120 to 1,314,000 gallons per year (gpy). Film processors must rinse processing chemicals from the film before it reaches the dryer section of the machine. In most machines, the rinse section of the processor receives a constant supply of running water, most commonly up to 2.5 gpm.

The project tested the Water Saver/Plus model water recycling device used in conjunction with x-ray film processors.

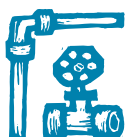
The Water Saver/Plus holds 15 gallons of water and circulates the water through the rinse section of the processor. A timer releases a set amount of fresh water, up to 4 gallons per hour into the unit for proper temperature control. No operational changes were required to use this technology.

The project consisted of metering the existing x-ray equipment, retrofitting the new x-ray equipment and analyzing the data. The District attached a water meter (Neptune T-10, brass, 5/8 inch) to the existing intake line for one month prior to installing the new equipment. The meter remained on the line for at least one month after the recirculating unit was installed. Using data loggers, the District recorded minute-by-minute water flows with the results from the seven hospitals noted in the chart in 15 minute intervals. In the 7 day period recorded on the data

logger, the Water Saver/Plus saved 8,283 gallons, or 1.33 acre feet per year.

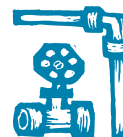
The results demonstrate a significant reduction in water use (see column D, usage per day, in the table at right), with an estimated 97 to 100 percent savings from the 7 hospitals over the course of the study. The hospitals' range of water use was 2,240 to 4,529 gallons per day at installation. The Water Saver/Plus device demonstrated a reduced range of 14 to 66 gallons per day. The hospitals were surveyed after the study for comments. Three hospitals made adjustments to the equipment but once corrected all the hospitals were pleased with the performance of the unit and the associated savings.

The Irvine Ranch Water District along with East Bay Municipal Utility District and Upper San Gabriel Valley Municipal Water District have successfully completed their grant funded project on time and with remarkable results.



Columbia Canal Company Converts from Flood to Drip

By Phil Anderson



With financial assistance from the Columbia Canal Company and a CALFED grant, four almond growers were able to convert their orchards from flood to drip irrigation, realizing an annual water savings of 1,074 acre-feet, a reduction from 6 acre-feet to 4 acre-feet per acre.

The Columbia Canal Company is located in the Central San Joaquin Valley, north of the city of Mendota, and east of the City of Firebaugh. Cotton, alfalfa, and various vegetables have been the predominate crops grown in the Company's service area of approximately 15,392 irrigable acres. These crops traditionally comprised

eighty percent of the annual cropping pattern. A considerable portion of these lands are being converted to almonds, a crop that requires less water and has potentially higher economic returns. The Company has been encouraging the conversion of gravity irrigation systems to more efficient pressurized systems. The objective of this project was to increase irrigation efficiency through irrigation system changes.

Four growers with a total of 455 acres participated in the program. All of the sites have meters installed that are monitored monthly throughout the

irrigation season. The average amount of water applied over the 455 acres was 3.94 acre-feet per acre on the drip irrigated almond orchards compared to 6 acre-feet per acre for flood irrigated almonds or alfalfa. The estimated water savings were 1,365 acre-feet; actual water savings were 1,074 acre-feet. The total cost to convert 455 acres from flood to drip irrigation was \$438,975 of which the growers paid 40 percent, Columbia Canal 25 percent, and the CALFED grant through DWR paid 35 percent. Columbia Canal anticipates that other almond acreage in their jurisdiction will convert to drip irrigation as a result of this successful project.

Irvine Ranch Water District Results

Hospital	Date	#of days	Read	usage (Gal)	Usg/Day	Est. Usg/Yr	Est. Saving/Yr	% Savings	Savings as AF
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>F</i>	<i>H</i>
Greater El Monte Community Hospital									
Date of 1st read	11/21/2001		121,890						
Date of installation	11/28/2001	7	153,590	31,700	4,529	1,652,929			
Date of 3rd read	12/5/2001	7	153,950	360	51	18,771	1,634,157	99%	5.02
San Gabriel Valley Medical Center									
Date of 1st read	11/21/2001		3,440						
Date of restart	11/28/2001	7	9,910	6,470					
Date of installation	12/5/2001	7	35,720	25,810	3,687	1,345,807			
Date of 3rd read	12/12/2001	7	35,820	100	14	5,214	1,340,593	100%	4.11
Queen of the Valley Hospital									
Date of 1st read	11/21/2001		610						
Date of installation	11/28/2001	7	24,450	23,840	3,406	1,243,086			
Date of 3rd read	12/5/2001	7	24,840	390	56	20,336	1,222,750	98%	3.75
Irvine Regional Hospital									
Date of 1st read	1/24/2002		22,990						
Date of installation	2/21/2002	28	83,850	60,860	2,174	793,353			
Date of 3rd read	3/21/2002	28	84,890	1,040	37	16,557	779,796	98%	2.39
San Leandro Hospital									
Date of 1st read	3/15/2002		229,140						
Date of installation	4/11/2002	27	310,950	81,810	3,030	1,105,950			
Date of 3rd read	5/10/2002	29	312,630	1,680	58	21,145	1,084,805	98%	3.33
Children's Hospital Oakland									
Date of 1st read	3/15/2002		276,200						
Date of installation	4/12/2002	28	338,930	62,730	2,240	817,730			
Date of 3rd read	5/10/2002	28	340,670	1,740	62	22,682	795,048	97%	2.44
Eden Township Hospital									
Date of 1st read	3/15/2002		24,350						
Date of installation	4/12/2002	28	106,150	81,800	2,921	1,066,321			
Date of 3rd read	5/10/2002	28	108,000	1,850	66	24,116	1,042,205	98%	3.20

C = (B, 1st read – installation, installation – 3rd read)

D = C/A (gallons/day / days in study)

E = D x 365

F = (E, usage at installation - usage at 3rd read)

G = F / E, (estimated yr savings / usage at installation)

H = (F/325,829) (annual est. savings / gallon in AF)

California Urban Water Conservation Council

By Mary Ann Dickinson, Executive Director



Practical Plumbing Handbook!

The Council has reprinted the ever-popular Practical Plumbing Handbook, a user-friendly consumer guide to high-efficiency plumbing and how to keep it efficient and trouble-free. Full of information on the mysteries of plumbing noises and foibles, the handbook is a graphic delight and fun to read. Copies in bulk are available from the Council for \$1 each for members and \$2 each for non-members. A Spanish version, "Manual de Plomería Práctica" has just rolled off the presses, and is also available. Contact the Council office at (916) 552-5885 for further information.

Council Adds Technical Advisors

Fiona Sanchez and Thomas Pape have joined the Council as half-time technical advisors to the membership. Fiona is serving southern California and Tom is serving northern California. Member water agencies can contact them for free assistance and information on BMP implementation and planning. In addition, Fiona and Tom will staff committees of the Council, such as the Landscape, Residential, and CII Committees. To get in touch with the Technical Advisors, call the Council office at (916) 552-5885.



BMP Reporting Now Due!

The deadline is nearly here for water agencies to once again report on their Best Management Practice (BMP) activity for the fiscal years 2000-01 and 2001-02. The reporting forms are available on the Council's Web site at www.cuwcc.org. Water agencies that are Council members

and have forgotten their reporting passwords can call the Council office at (916) 552-5885. The deadline date is January 1, 2003 for final BMP Report filing so that all the water agency data can be included in the Council's official BMP summary sent to the State Board in 2003.



2002-2003 BMP Exemptions Due!

Also due are the BMP exemption applications for the next 2002-03 reporting year. The Council has developed spreadsheets for calculating the cost-effectiveness of each of the quantifiable BMPs and these spreadsheets have been posted on the Council's Web site under the Technical Resources Page. The Council also held training workshops in October on how to evaluate the costs and benefits of BMPs and how to prepare exemption applications. Contact the Council at (916) 551-5885 if you wish to obtain a copy of the materials from the Council's workshop.

Watering Index

Continued from page 8.

105 percent, the controller would be turned on all 7 days. For an index of 75 percent to 90 percent, one day would be dropped. As the index drops below 75 percent a second day would be dropped, having only 5 of seven days of operation. A day is dropped for each 15 percent drop in the index on down to conceivably zero. During the rainy season the controller can be turned off or all start days canceled. Using 15 percent increments of the watering index the adding and dropping of start days will allow watering to closely match the current ET.

For the sprinkler and hose application, the user needs to think or create a schedule of how often and how long the sprinkler runs during the months of July and August. The weekly times can simply be multiplied by the index to create modified applications. If a sprinkler is turned on for an hour in each location once per week during the hot months, then when the index is 75 percent or lower run the sprinkler 45 minutes per setting.

Water Conservation Newsbriefs



UCLA Study Shows Water Reclamation Could Become an Important Source of Future Water Supplies

The demand for water outside of California, along with environmental needs, is reducing Southern California's imported water supplies, according to the UCLA Institute of the Environment researchers' Southern California Environmental Report Card for 2002. Water reclamation, or the reuse of highly treated wastewater, potentially can provide new supplies equal to approximately 50 percent of Southern California's water consumption.

"There is a lesson to be learned from the recent energy crisis," researchers Michael Stenstrom and Richard Berk wrote. "We did not construct the needed electricity-generating infrastructure or implement the necessary conservation to provide for the future. The same thing is occurring with water supply. Water-reclamation plants take just as long to construct as electricity-generating plants, and water is much less transportable than electricity." Researchers also warned that California's drought could be more severe and longer than those in the past, and that "the problem it creates could make our electricity shortage seem trivial by comparison."

Each year, the Institute of the Environment's Report Card examines and grades the region on its progress on a range of major environmental issues. The Report Card is distributed to elected officials, environmental activists and other

leaders to help guide environmental policy in Southern California. In addition to water reclamation, this year's Report Card covers how well cities have disposed of their garbage, the protection of Southern California's biodiversity and sustainable building.

In a recent survey of Los Angeles homeowners, respondents were asked whether they would use reclaimed water for certain household and personal activities. Although the question dealt with the use of reclaimed water at least as pure as water from the tap, respondents said they would use reclaimed water for outdoor uses but few would use it indoors. Institute researchers noted, however, that water-reclamation projects use advanced technologies that provide treatment well in excess of that provided for tap water. They cautioned the public against believing that water reclamation is a "toilet to tap" water program and also noted that water-reclamation programs are already taking place in California. The Los Angeles County Sanitation Districts, for example, produced more than 520 million gallons per day of treated wastewater in 2000. The districts' number of reclamation sites also has increased from 100 in 1990 to 418 in 2000. The Orange County Water is working on a process known as indirect potable reclamation as well as directing public investment into water reclamation.



City of Palmdale – Looking to the Future of Saving Water

The City of Palmdale is planning for the future—specifically the future of water in Palmdale. As part of its plan, the city has

put into place the following water saving measures:

- All landscape watering is now being done within the water window of between 8:30 p.m. and 9 a.m. daily, two hours less watering per park site than before. This does not include newly planted areas currently on a one-year maintenance agreement.
- The monitoring of irrigation systems is being done once a month instead of twice a month.
- Water usage analysis in conjunction with the Central Control Irrigation Management System has been achieved at each site to ensure correct precipitation rates, nozzle uniformity and other variables to ensure optimum efficiency.
- The facilities staff has installed flow restrictors in aerators on faucets and automatic sensor-type valves and faucets, low flow showerheads at the pool facilities and space modules in the tank type toilets to reduce the gallons per flush to conserve water in City buildings.

For more information about the City of Palmdale energy conservation and water reduction plans call the public works department at (661) 267-5300.



Learning More about China's "Agricultural Science City"

By Kent Frame

Through the Office of Water Education OWUE and CIMIS often host dignitaries and scientists from around the world. Recently, OWUE entertained representa-

*Continued.
See "Newsbriefs" on page 15.*

Water Conservation Events



CII 41st Annual Meeting 2003 Zero Discharge: What Will it Cost?

January 29 - 30, 2003

Radisson Hotel, Fresno, California

The CII 41st annual conference covers water discharges in irrigation and the implications of effectively eliminating such discharges. This conference will bring you up to date on the latest technology as well as policies affecting irrigation water discharges, and irrigation in general today.

Featured at the venue are Keynote speaker: Celeste Cantu, Executive Director, State Water Resources Control Board; Tess Dunham, Director of Water Resources for the California Farm Bureau Federation, and westside grower John Diener, among others. The lunch speaker on Thursday will be Tom Kirk, Executive Director of the Salton Sea Authority, with an update on the implications the proposed Imperial Irrigation District—San Diego County Water Authority water transfer could have on the Salton Sea. Concurrent sessions will address zero discharge regulations, water management technology, and implications for water quality and water supply to downstream users. Some key speakers are Lynda Smith, MWD; David Bolland, ACWA; and Van Tenney, Glenn-Colusa I.D.

The conference program is cosponsored by the California Agricultural Water Management Council and the California Urban Water Conservation Council, with concurrent sessions on agricultural and urban irrigation. Other principal cosponsors are DWR, MWD, and USBR.

Certified Crop Advisor and Irrigation Association continuing education credits are available. For more information visit www.caii.org.



Irrigation District School of Irrigation - Winter 2003

The following classes are available for irrigation professionals through the Irrigation Training and Research Center (ITRC). Please sign up early since most of these classes will fill up. All classes are located at ITRC at California Polytechnic State University, San Luis Obispo, California. The fees are \$30 per day per person for all U.S. irrigation districts and \$150 per day per person for participants from outside the U.S. For complete class listings and descriptions visit the Web site www.itrc.org/classes/IDSchoolOfIrr.html. For questions about course content contact Stuart Styles, ITRC Director, at (805) 756-2429, e-mail sstyles@calpoly.edu. For questions about registration contact Susanne Gartner, Program and Budget Analyst ITRC, at (805) 756-2530, e-mail sgartner@calpoly.edu.

Class Series #1 — for Engineers, Managers, and Board Members

Flow Measurement, General and Pipelines

March 10

Flow Measurement, Canals

March 11 - 12

Canal Modernization

March 13 - 14

SCADA: Introduction

March 17

SCADA: Advanced

March 18 - 21

Class Series #2 — for Field Operators (each class offered 2 different times)

Flow Measurement, General and Pipelines

January 14 and March 25

Flow Measurement, Canals

January 15 and March 26

Canal Operation

January 16 and March 27



Office of Water Use Efficiency Water Recycling

Desalination Program - 2003

For more information visit www.owue.water.ca.gov/recycle

Emerging Issues in Reuse Conference January 24, 2003

Orlando, Florida

Sponsored by the Florida Water Environment Association and the WaterReuse Association. For more information visit www.fwea.org or www.watereuse.org.

Seventh 2002 Recycled Water Task Force Meeting

February 26, 2003

San Francisco, California

For more information visit www.owue.water.ca.gov/recycle/taskforce/taskforce.cfm

California Section Annual Membership Meeting

February 27 - 28, 2003

San Francisco, California

For more information visit www.watereuse.org/Pages/currents.html.

*Continued.
See "Events" on page 16.*



Newsbriefs

Continued from page 13.

tives from China's Yangling Demonstration Zone who were extremely interested in the CIMIS program and the attributes the program offers to the end users.

Located in the central Guanzhong Plain bordering the Weihe River is the Yangling Demonstration Zone of Agricultural Hi-tech Industries (YDZAH). Established on July 29, 1997 with the approval of the State Council, it is the only state-level agricultural hi-tech zone in China. Known as "the Agricultural Science City," it is powerful in technological resources of agriculture, forestry and water conservation. Within 4 square kilometers around it, there are two institutions of agricultural higher learning. It leads China in dry land farming, plant and animal improvement, irrigation and water saving, reproductive endocrine embryo project of domesticated animals, integration control of soil erosion on the Loess Plateau, and the protection and use of botanical resources. Covering an area of 22.12 km², YDZAH is made up of 7 divisions: the division of agricultural science park, the demonstration division of modern agriculture and rural construction park, the division of agricultural hi-tech industry park, the division of integrate agricultural park, the park of pilot agriculture, the Service Park and the division of agricultural sight-seeing and leisure.

New Publications



Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters

By: Robert Jerome Glennon
Available at www.islandpress.org

This new book published by Island Press is the first book to focus on the impact of groundwater pumping on the environment; it brings this widespread but underappreciated problem to the attention of citizens and communities across America. Specifically, Robert Jerome Glennon explains what killed the Santa Cruz River that once flowed through Tucson Arizona—and could devastate other surface waters across the United States—was groundwater pumping. From 1940 to 2000, the volume of water drawn annually from underground aquifers in Tucson jumped more than six-fold, from 50,000 to 330,000 acre-feet per year. And Tucson is hardly an exception—similar increases in groundwater pumping have occurred across the country and around the world. Glennon sketches the culture of water use in the United States, explaining how and why we are growing increasingly reliant on groundwater.



The Layperson's Guides **Water Education Foundation**

Two Water Education Foundation Layperson's Guides that have been updated and revised for 2002 are now available. These in-depth, easy-to-understand guides provide information on

the topics and regions that are of key interest in the management of water in California, and the West. Layperson's Guides - which are periodically updated - are an excellent resource for researchers, reporters, elected officials, and the interested public.

The guides sell for \$7 each, \$5 each for 10 or more of each title or the entire 15-guide set for \$95. Also available for \$110 is a boxed set of the guides with complimentary updates for 2 years. To place an order, visit www.watereducation.org or call (916) 444-6240

The Layperson's Guide to Drinking Water

This guide was revised and expanded to 24 pages to include information on some of today's most-challenging treatment issues: disinfection byproducts caused by chlorine, arsenic, chromium 6, pesticides, nitrate, salinity and MTBE. The guide provides an overview of how and why drinking water is treated, explains the federal and state laws governing drinking water standards and treatment, and explores the water quality challenges for groundwater and surface water.

The Layperson's Guide to Water Conservation

This guide was also expanded to 24 pages to allow for more information about water conservation efforts in other western states, whether in response to periodic droughts or to boost everyday water use efficiency. The special section on What Homeowners Can Do also was expanded. General information about water conservation programs in California such as the urban BMPs and agricultural EWMPs was updated. The revision of this guide was funded by a grant from the CALFED Bay-Delta Program.

WATER CONSERVATION NEWS

P. O. Box 942836
Sacramento, CA 94236-0001



Address Correction Requested

Events

Continued from page 14.

Third World Water Forum

March 16 - 23, 2003

Kyoto, Shiga and Osaka, Japan

For more information visit
www.worldwaterforum.org.

Technology Transfer Workshop: Emerging Trends in Membrane Technology Applications

April 2 - 3, 2003

Phoenix, Arizona

Sponsored by the American Membrane Technology Association and the WaterReuse Association. For more information visit www.watereuse.org or www.membranes-amta.org.

European Conference on Desalination and the Environment: Fresh Water For All

May 4 - 8, 2003

Malta

Sponsored by the European Desalination Society. For more information visit www.edsoc.com.

NAMS 2003 – 14th Annual Conference and Workshop

May 17 - 21, 2003

Jackson Hole, Wyoming

Organized by the North American Membrane Society. For more information visit www.che.utexas.edu/nams/NAMSHP.html.

WaterReuse Foundation 2003 Annual Water Reuse Research Conference

June 2 - 3, 2003

Westin San Francisco Airport, San Francisco, California

Sponsored by the WaterReuse Association. For more information visit www.watereuse.org.

AMTA Annual Symposium of the American Membrane Technology Association

August 4 - 5, 2003

Westin Resort, Boulder, Colorado

For more information visit
www.membranes-amta.org.

Ninth Conference on Design Operation and Costs of Large Wastewater Treatment Plants

September 1 - 4, 2003

Prague, Czech Republic

For more information visit www.ace-cr.cz/html/2003_Conference_IWA/HI_strana.htm.

2003 WaterReuse Annual Symposium XVIII

September 7 - 10, 2003

Marriott Rivercenter, San Antonio, Texas

Sponsored by the WaterReuse Association. For more information visit www.watereuse.org.

International Desalination Association World Congress on Desalination & Water Reuse

September 28 - October 2, 2003

Atlantis Hotel, Paradise Island, Bahamas

For more information visit www.ida.bm.